

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**In re Application of:**

Leslie A. Jardine

**Applicant:** W. R. Grace & Co.-Conn.

**International Filed Date:** 02 October 2003

(02.10.03)

**International Application No.**

PCT/US03/31364

**Priority Date:** 09 October 2002 (09.10.02)

**For:** AMINE CONTAINING CEMENT PROCESSING ADDITIVES

**AMENDMENTS UNDER ARTICLE 19**

**International Bureau of WIPO**

**34 chemin des Colombettes**

**1211 Geneva 20**

**Switzerland**

**Facsimile No.: (41-22) 740.14.35**

Sir:

Applicants submit Substitute Page (containing claims), a Written Letter, and a Statement under Article 19(1) in response to the International Search Report mailed 12 March 2004, and request that the Substitute Page be entered into the above-identified application, pursuant to Rules 66.8 and 66.9 and any other rules applicable.

- Amendments to the claims are reflected in the complete listing of claims which begins on page 2 of this paper.
- Written Letter explaining amendments begins on page 4 of this paper.
- Statement under Article 19(1) begin on page 5 of this paper.
- Substitute Page ("12") is attached at the end of this paper.

**CERTIFICATE OF FAX TRANSMISSION**

I hereby certify that this correspondence is being transmitted by telecopier (fax) directly to International Bureau of WIPO, 34 chemin des Colombettes, 1211 Geneva 20, Switzerland (Facsimile No.: (41-22) 740.14.35 on April 27, 2004.

I also certify that a copy of this transmission is being transmitted by Express Mail under EV 222840798 US postage prepaid, to the following address: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 27, 2004.

Name: Craig K. Leon



April 27, 2004

**Amendments to Claims**

1. (cancelled)
2. (cancelled)
3. (cancelled)
4. (cancelled)
5. (cancelled)
6. (cancelled)
7. (currently amended) A method for enhancing grinding efficiency in a cement grinding process, comprising: introducing, into the grinding of cement clinker to produce cement, ~~tetrahydroxylethylethylene diamine~~ an ~~ethylene diamine~~ or derivative thereof; and an alkanolamine selected from the group consisting of triethanolamine, triisopropanolamine, and diethanolisopropanolamine, the ratio of said tetrahydroxylethylethylene diamine to said alkanolamine being 95:5 to 5:95 based on weight, and the dosage of said amines to cement being 0.001% s/s to 0.5% s/s.
8. (cancelled)
9. (currently amended) A composition provided by the method of claim 7  
8.
10. (cancelled)
11. (currently amended) The method of claim 8 ~~10~~ wherein the dosage of said amines to cement is 0.01% s/s to 0.1% s/s.
12. (cancelled)
13. (currently amended) The composition of claim 9 ~~12~~ wherein said tetrahydroxylethylethylene diamine is present in the amount of 20-30% and said diethanolisopropanolamine is present in the amount of 80-70%, said percentages based on total weight of said composition.
14. (original) The composition of claim 13 ~~12~~ ~~further~~ comprising triethanolamine.
15. (cancelled)
16. (new) The method of claim 7 comprising incorporating, into the grinding of cement clinker, tetrahydroxylethylethylene diamine in the amount of 28-38%, triethanolamine in the amount of 9-19%, and diethanolisopropanolamine in the amount of 53-63%, said percentages based on weight of total amines.

17. (new) The method of claim 7 wherein the incorporation of said tetrahydroxylethylene diamine and triethanolamine enhance Blaine fineness of cement produced from the grinding of said cement clinker above additive dosage of said amines when incorporated separately.

18. (new) The method of claim 7 wherein said grinding of said cement clinker occurs in closed-circuit grinding wherein coarse ground material is returned into the mill for further grinding, the incorporation of said tetrahydroxylethylene diamine and triethanolamine decrease the amount of coarse material returned to the mill for further grinding.

19. (new) The method of claim 7 wherein said incorporation of said tetrahydroxylethylene diamine and triethanolamine enhances the feed rate at which cement clinker is fed into the grinding mill.

**Written Letter Explaining Amendments**

Where originally there were 15 claims, after cancellation of 10 claims and addition of 4 new claims, there are now 9 remaining claims, which are shown in amended form on preceding pages and which are renumbered as claims 1-9 in the attached Substitute Page.

**Statement under Article 19(1) (Rule 46.4)**

Method claim 7 is amended to incorporate the recitation of components and amounts as previously set forth in claims 8 and 10, now cancelled. Claims 9, 11, 13, and 14 are amended to correct dependency and improve readability.

New claim 16 depends on claim 7 and is supported by the ratios of components at page 11, lines 8-10 (the compositions designated by "THEED," DEIPA" and "TEA" are identified at page 5, lines 25-31, with "diethanolisopropanolamine" being used previously in claims 12 and 13 to refer to the alkanolamine.

New claim 17 is based on claim 7 and describes the enhanced Blaine fineness achieved by the incorporation of tetrahydroxylethylethylene diamine and triethanolamine, as described in Example 1, e.g., page 6, lines 12-17, particularly lines 27-28; *See also* Example 2.

New claim 18 is also based on claim 7 and describes the decrease in coarse grind material required to be returned to the grinding mill, as describe also in Example 1, e.g., page 6, lines 31-32; *See also* Example 3.

New claim 19 is also based on claim 7 and describes the increased feed rate on the mill, as described in Example 1, page 6, line 32; *See also* Example 4.

Thus, no new matter is introduced into the above-identified application by way of these claim amendments.

**CONCLUSION**

In view of the foregoing amendments, Applicant requests that a favorable International Preliminary Examination Report be issued in respect of the above-identified application.



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SUBSTITUTE PAGE

1. A method for enhancing grinding efficiency in a cement grinding process, comprising: introducing, into the grinding of cement clinker to produce cement, tetrahydroxylethylethylene diamine or derivative thereof and an alkanolamine selected from the group consisting of triethanolamine, triisopropanolamine, and diethanolisopropanolamine, the ratio of said tetrahydroxylethylethylene diamine to said alkanolamine being 95:5 to 5:95 based on weight, and the dosage of said amines to cement being 0.001% s/s to 0.5% s/s.
2. A composition provided by the method of claim 1.
3. The method of claim 1 wherein the dosage of said amines to cement is 0.01% s/s to 0.1% s/s.
4. The composition of claim 2 wherein said tetrahydroxylethylethylene diamine is present in the amount of 20-30% and said diethanolisopropanolamine is present in the amount of 80-70%, said percentages based on total weight of said amines.
5. The composition of claim 4 comprising triethanolamine.
6. The method of claim 1 comprising incorporating, into the grinding of cement clinker, tetrahydroxylethylethylene diamine in the amount of 28-38%, triethanolamine in the amount of 9-19%, and diethanolisopropanolamine in the amount of 53-63%, said percentages based on weight of total amines.
7. The method of claim 1 wherein the incorporation of said tetrahydroxylethylethylene diamine and triethanolamine enhance Blaine fineness of cement produced from the grinding of said cement clinker above additive dosage of said amines when incorporated separately.
8. The method of claim 1 wherein said grinding of said cement clinker occurs in closed-circuit grinding wherein coarse ground material is returned into the mill for further grinding, the incorporation of said tetrahydroxylethylethylene diamine and triethanolamine decrease the amount of coarse material returned to the mill for further grinding.
9. The method of claim 1 wherein said incorporation of said tetrahydroxylethylethylene diamine and triethanolamine enhances the feed rate at which cement clinker is fed into the grinding mill.